"PATENT"

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Alla Jurievna Krylova, et al. U. S. Serial No. 09/653,719 Filed: September 1, 2000 FISCHER-TROPSCH CATALYST ENHANCEMENT	)	Before the Examiner Cam N. Nguyen Confirmation Number: 6607 Group Art Unit: 1754 Family Number: P2000J080

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

FAX RECEIVED
OCT 30 2003
GROUP 1700

Sir:

REMARKS

Applicants have amended claims 1-13 to address the Examiners objections. Specifically, "consisting" has been added to step c of claim 1; the word fluid has been replaced by liquid in claim 4; the word promoter has been inserted before metal in claims 10-12; and the word metal has been changed to metals in claim 13.

With the above amendments, applicants believe that claims 1-13 are in condition for allowance as previously indicated by the Examiner.

Claims 18-19 have been cancelled in response to the restriction requirement.

Applicants contend that claims 14-17 are allowable as written in view of the following comments. However, if the Examiner does not agree, the Examiner is asked to please phone Applicants to discuss an Examiner's amendment.

With regard to claims 14-17, the Examiner has once again rejected claims 14-16 under 102 (b) or in the alternative under 103 (a) in view of Kibby (US 4492774). Claims 15 and 17 are further rejected under 102 (b) or in the alternative under 103 (a) in view of Mauldin (US 4992406).

CERTIFICATION OF FACSIMILE TRANSMISSION
I hereby certify that this paper is being facsimile transmitted to the Commissioner for Patents facsimile number 1-703-872-9311 on the date shown below.

Susan Fleming	Susan Fleming	September 23, 2003
Type or print name of person signing certification	Signature	Date

27810
PATENT TRADEMARK OFFICE

Appplicants reassert the previous comments made with regard to these references and include the following additional comments which reaffirm the differences between the cited references and claims 14-17. Both Kibby and Mauldin are directed to cobalt silicoaluminate catalysts or supported catalysts respectively which are fundamentally different and recognized as such by the art from dispersed active metal catalysts (DAM) in terms of structure, composition, and chemical properties.

For example,

cobalt silicoaluminate as disclosed by Kibby at column 2, line 25 is represented by the formula(1)

(1) $Al_{(4-n-x)}\ Co_{(3/2)n}O_8(OH,F)_4Si_{8-y}Al_yO_{12},(3x+y)NH_4^+.zH_2O$

To maximize the cobalt content the highest number n would be selected and therefore, n would equal 4 according to (col2, line 28) resulting in the following formula (2)

(2) $Al_{(-x)}Co_6O_8(OH,F)_4Si_{8-y}Al_yO_{12},(3x+y)NH_4^+.zH_2O$

Since such a formula leaves a negative valeue for x, ithe skilled artisan would utilize the value of zero for x. thus yielding formula (3)

(3) $Co_6O_8(OH,F)_4Si_{8-y}Al_yO_{12},(y)NH_4^+.zH_2O$

Kibby goes on to state that upon heating during the activation treatment (column 2, lines 40-42) a minor change in the above formula will result and that most or all of the water of hydration will be driven off (Column, line 44). If all the water is removed the following formula (4) will result:

(4) $Co_6O_8(OH,F)_4Si_{8-y}Al_yO_{12},(y)NH_4^+$

Heating also remove ammonia as NH_4OH (col2, line 45-46). Maximizing the loss of NH_4OH would lead to the following formula (5):

(5) $Co_6O_8(OH,F)_{4-y}Si_{8-y}Al_yO_{12}$

To maximize the cobalt content, one skilled in the art recognized that the Al content must also be maximized (lower atomic weight for Al versus Si). Thus, according to column 2, line 32, y=2 resulting in formula (6)

(6) $Co_6O_8(OH,F)_2Si_6Al_2O_{12}$

Assuming that all other dehydration reactions are completed, yields formula (7)

(7) $Co_6O_8(O)Si_6Al_2O_{12}$ or $Co_6Si_6Al_2O_{21}$

U.S. Serial No. 09/653,719
Reply to Office Action of: August 21, 2003
Family Number: P2000J080

Assuming that all the cobalt is reduced and that the refractory oxides SiO2 and Al2O3 will remain since the refractory oxides require temperatures in excess of 1500 °C to effect their reduction, which temperatures are well in excess of the reduction temperatures taught by Kibby of 500-750°C (column 2, lines 59-60) formula (8) results

(8) $Co_6Si_6Al_2O_{15}$

Examining the Co content of such a composition we obtain:

Formula	MW	Co wt %	Si+Al wt%	O wt%
(8)	816	43.3	27.2	29.4
(7)	912	38.8	24.3	36.8
(6)	930	38.1	23.9	37.8
Raney (ex 1)		88-97	<1-4	<2-8

Thus, based on the Kibby disclosure, the cobalt aluminosilicate would have a potential maximum content of cobalt of 43.3%, which is lower than any DAM catalyst for which the metal content is at least 50%, preferably at least 80%. In fact, the composition of the catalyst disclosed in example 1 of the instant application, namely the MSDS (Grace Davison, ref. No. 3303) provided by the manufacturer of the Raney Catalyst states that it contains 88 to 97 wt% cobalt.

Hence it is clear to the skilled artisan that the cobalt silicoaluminate as taught by Kibby does not qualify as a DAM catalyst. The skilled artisan further recognizes that to obtain the maximum cobalt content, the activation treatment in the Kibby process would have to be much more severe than 750°C. Furthermore, the skilled artisan recognizes that if a more severe treatment were to be applied to the Kibby catalyst, in all likelihood the structure of the crystalline aluminosilicate would be destroyed.

Given the fact that a DAM catalyst is not based on a silicoaluminate structures, it would not have been obvious to the skilled artisan, with the Kibby reference in hand how a DAM catalyst according to the instant invention could be prepared.

Regarding the rejection of claim 15 and 17, in view of Mauldin, Applicants disagree with the Examiner's interpretation of the Mauldin patent. Mauldin specifically discloses supported catalysts where the metal is uniformly dispersed throughout the support particles, or those wherein the cobalt is dispersed on the support particles as thin catalytically active layers , or films..." (Col6, line 56-64). Conversely, the DAM catalysts of the instant invention have no support at all. Similar disclose of the supported materials of Mauldin can be found at column 5, line 18. The Examiner seems to ignore the fact that the catalysts of Mauldin are catalysts where the cobalt is supported albeit on a support whereas the DAM catalysts of the instant invention do not have either a support or binder as part of their composition. In fact, the Mauldin patent teaches that the support composition is critical to the performance of the

catalyst, implying that the composition of the catalytic metals alone is not sufficient for obtaining good performance.

Here also a composition calculation can be done.

Column 13, table 13 shows a range of densities for the supports ranging from a low of 0.6 to a high of 1.59. When combined with the cobalt loading disclosed at column 5, line 65 of 0.15g/cc of catalyst one obtains:

0.15 g of Co for 0.6 g of support as the highest Co loading per Mauldin, i.e. 20 wt % cobalt which also falls far short of the composition of DAM catalysts of the instant invention.

Thus, it cannot be seen how a skilled artisan starting with either the Kibby or Mauldin patent could arrive at Applicants invention. Indeed, components such as supports which the cited art require and teach as being critical to the invention are absent from the instant invention.

In view of the above comments, Applicants contend that claims 14-17 are allowable and respectfully request such favorable treatment.

Respectfully submitted,

ESTELLE C. BAKUN
Attorney for Applicant(s)
Registration No. 35,054
Telephone Number: (908) 730-3635
Facsimile Number: (908) 730-3649

[X] Pursuant to 37 CFR 1.34(a)

ExxonMobil Research and Engineering Company
P. O. Box 900
Annandale, New Jersey 08801-0900

ECB:sbf
September 17, 2003

OFFICIAL